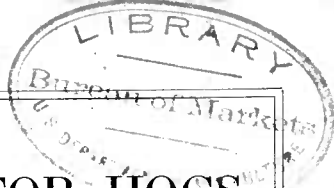


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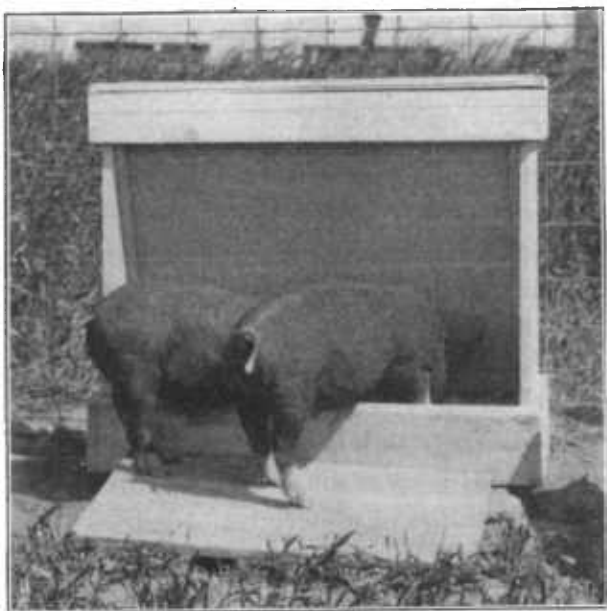
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THE SELF-FEEDER FOR HOGS

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Young Pigs Soon Learn to Eat from the Self-Feeder.

FARMERS' BULLETIN 906

UNITED STATES DEPARTMENT OF AGRICULTURE

Contribution from the Bureau of Animal Industry

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Washington, D. C.

December, 1917

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WITH the ingredients of a good ration constantly before them, placed so that they may eat at will, hogs will make gains more rapidly and more economically than when fed by hand. The time needed to bring them to a certain weight will be shortened and the labor of feeding them will be reduced. Results of experiments proving these facts are stated briefly in this bulletin, and plans for constructing self-feeders of several kinds are given, together with lists of materials needed.

THE SELF-FEEDER FOR HOGS.

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WHAT THE SELF-FEEDER IS.

THE USE OF SELF-FEEDERS for fattening hogs is gaining in popularity. A self-feeder is simply a device by means of which a supply of grain or other feed is kept constantly available to the hogs, in order that they may always satisfy the craving of their appetites with respect to the kind and the amount of feed.

Hogs in the wild state were self-fed animals, living upon such feeds as would satisfy their appetites, and under domestication they seem to thrive best when fed by the same principle. The marked success of the self-feeding system of hog raising is largely due to the fact that they may eat an abundance of those feeds which will nourish them to the best advantage.

EXPERIMENTAL DATA.

In order to determine whether the system of self-feeding may be applied to the fattening of pigs, numerous experiments have been conducted in recent years comparing similar lots of pigs when hand-fed and when self-fed upon the best rations known to hog raisers.

The United States Department of Agriculture conducted two tests with the self-feeder at the Experiment Farm at Beltsville, Md. These tests are by no means conclusive in themselves, but when considered in conjunction with similar tests made at several State experiment stations, with their preponderance of corroborative data, it is safe to rely upon some general facts which are clearly shown.

EXPERIMENT 1.

Experiment 1, with 18 grade Berkshire pigs, from February 22 to May 2, 1916, was conducted to compare the relative fattening efficiency of a ration of corn meal, middlings, and tankage when hand-fed and when self-fed. The pigs were kept in dry lot. The hand-fed

lot was fed three times daily, the amount being governed by the appetite, while the self-fed pigs had free access at all times to the three feeds placed in separate compartments of the self-feeder. The results obtained are contained in the following table:

TABLE 1.—*Comparison of hand feeding with the use of a self-feeder.*

Item.	Lot 1 (hand-fed): Corn meal 5 pounds, middlings 4 pounds, tankage 1 pound.	Lot 2 (self-fed): Corn meal 19 pounds, middlings 2.83 pounds, tankage 1 pound.
Number of pigs.....	9	9
Days on experiment.....	70	70
Total initial weight..... pounds..	850	829
Total final weight..... do.....	1,507	1,847
Total gain..... do.....	657	1,018
Average daily gain per head..... do.....	1.04	1.62
Total feed..... do.....	2,694.5	4,138
Daily ration in percentage of live weight..... per cent..	3.27	4.42
Feed per 100 pounds gain..... pounds..	410.1	406.4

Results.—Table 1 shows that the self-fed pigs in lot 2 gained much more rapidly by consuming a larger daily ration in proportion to live weight than did the hand-fed pigs in lot 1, but that this more rapid gain did not require any more feed in proportion to the gains in live weight. In fact, the self-fed pigs required a little less feed to gain 100 pounds in weight, than was required for lot 1, hand-fed.

EXPERIMENT 2.

Experiment 2, with 10 grade Berkshire pigs, from April 3 to May 1, 1917, was conducted to compare the value of corn meal with that of shelled corn for use in the self-feeder. Both lots had access to tankage in a separate self-feeder. The pigs averaged about 90 pounds in weight, and had the run of an excellent rye pasture. For means of comparison the data on a hand-fed lot (lot 3) are inserted. These pigs were exceptionally well grown, of the same breeding, a little older at the time of the experiment than were the pigs of lots 1 and 2, and grazed in a more nutritious pasture, rape. They were fed all they would consume of a balanced ration of corn meal, middlings, and tankage. Although lot 3 was fed in the fall of 1916, conditions were very similar to those for the self-fed pigs, and any possible advantage was in favor of lot 3. The results obtained are contained in the following table:

TABLE 2.—*Comparison of corn meal with shelled corn for use in the self-feeder.*

Item.	Lot 1 (self-fed): Rye pas- ture, corn meal 38 pounds, tankage 1 pound.	Lot 2 (self-fed): Rye pas- ture, shelled corn 16.3 pounds, tankage 1 pound.	Lot 3 (hand-fed): Rape pas- ture, corn meal 5 pounds, middlings 4 pounds, tankage 1 pound.
Number of pigs.....	5	5	5
Days on experiment.....	28	28	35
Total initial weight..... pounds.	431	444	695
Total final weight..... do.	657	658	954
Total gain..... do.	226	214	259
Average daily gain per head..... do.	1.61	1.53	1.48
Total feed..... do.	820	710	956
Daily ration in percentage of live weight..... per cent.	5.39	4.60	3.31
Feed per 100 pounds gain..... pounds.	362.8	331.7	369.1

Results.—Lot 1, self-fed on corn meal and tankage, made slightly more rapid gains than lot 2, self-fed on shelled corn and tankage, and both gained more rapidly than lot 3, hand fed on corn meal, middlings, and tankage. Lot 1, however, required 31 pounds more grain than lot 2 to produce 100 pounds of gain. The most expensive gains were made on lot 3 (the hand-fed lot), where 369.1 pounds of mixed feed were required to produce 100 pounds of gain in live weight. The gains were very profitable on all lots, but shelled corn and tankage, self-fed, produced the best results.

In themselves these tests are of small importance, but as the results are very similar to those obtained in experiments conducted at a number of State agricultural experiment stations they may be considered as fairly representative.

TOTAL EXPERIMENTAL RESULTS.

A compilation has been made of the results obtained with the self-feeder at numerous experiment stations in this country, and an average of all is contained in the following table:

TABLE 3.—*Average results with self-feeders at experiment stations.*

Num- ber of pigs.	Method of feeding.	Average days fed.	Average daily gain per head.	Average daily feed per head.	Average amount of feed per 100 pounds of gain.
262.....	Hand-fed.....	82.2	<i>Pounds.</i> 1.23	<i>Pounds.</i> 5.47	<i>Pounds.</i> 445
332.....	Self-fed.....	68.5	1.92	8	417

These results, obtained upon nearly 600 pigs, show clearly that more rapid gains are obtained with the self-feeder than by the best of hand-feeding methods, partly owing to the larger daily con-

sumption of feed per head, 8 pounds compared to 5.47 pounds, and partly owing to the more efficient use of the grain fed.

SPECIAL ADVANTAGES.

By means of the self-feeder the average farmer will have as good results as the most expert hand-feeder, and the results will be obtained at much less expense of time and labor. For the average farmer there is little doubt which method is the more economical, for, as is shown in Table 3, the self-feeding system is advantageous in every respect. Its use results, first, in larger daily gains in live weight, bringing the pigs to a marketable size at an earlier date; second, feed is consumed more rapidly, as shown by the average of the "daily feed per head" in Table 3; and, third, as there is an actual saving in the amount of feed required to produce 100 pounds of gain, it is shown that the increased feed consumption and the more rapid daily gains are not made at the expense of efficient use of the feed. On the contrary, a smaller amount of feed is consumed in making pork,

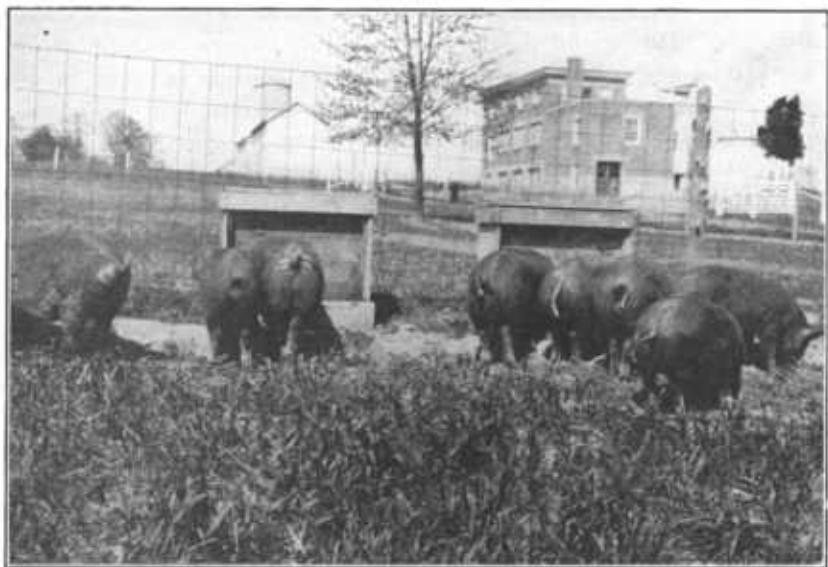


FIG. 1.—Forage supplemented with grain and tankage in the self-feeder is an excellent combination for fattening hogs.

which is a fact of extreme importance at present. The last and one of the most important advantages to the farmer at this time is the saving of labor, for although daily watch must be kept on the self-feeder to see that each compartment is well supplied and not clogged, this requires only a fraction of the time necessary to hand-feed the same hogs several times a day.

HINTS ON THE USE OF THE SELF-FEEDER.

The self-feeder (fig. 1) may be adapted to the use of any kind of grain or feed, although shelled grain and ground feeds are most commonly used. It may be adapted to handle ear corn, but such a feeder must be of large size and heavily made in order to hold sufficient grain to feed a bunch of hogs several days without refilling.

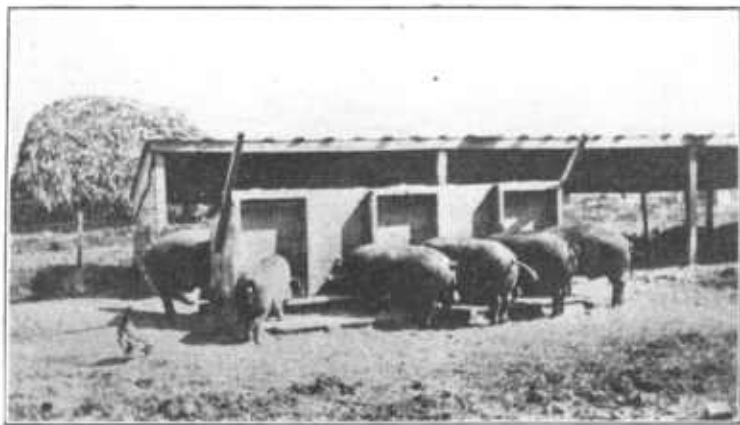


FIG. 2.—Hogs eating milo maize from a self-feeder.

In order that the self-feeder may readily be adapted to different kinds of grains it should be constructed with some means of regulating the opening through which the feed passes. For example, corn meal or barley requires a smaller opening to prevent too rapid a flow of grain than is required in the case of shelled corn. A well-constructed self-feeder will last a number of years, and as it may not always be convenient to feed the same grain every season some provision must be made to accommodate different sizes of grains.

Care should be taken to see that the self-feeder is always supplied with each feed, for if one part of the ration is missing the pigs will naturally eat an increased amount of any other available nutrient, and in such a case will make very poor use of it. For example, when tankage and shelled corn constitute the ration, if corn were to become exhausted the shoats would naturally eat a very large amount of tankage, which would not only fail to produce rapid gains, but would increase the consumption of a very high-priced feed. Too much emphasis can not be placed upon this point, for the beginner is apt to become careless in the use of a device which does not require constant care.

Two methods are in vogue in the preparation of grains for the self-feeder. The grain and the protein supplement to balance the ration may be mixed and fed from one self-feeder, or, better, the two

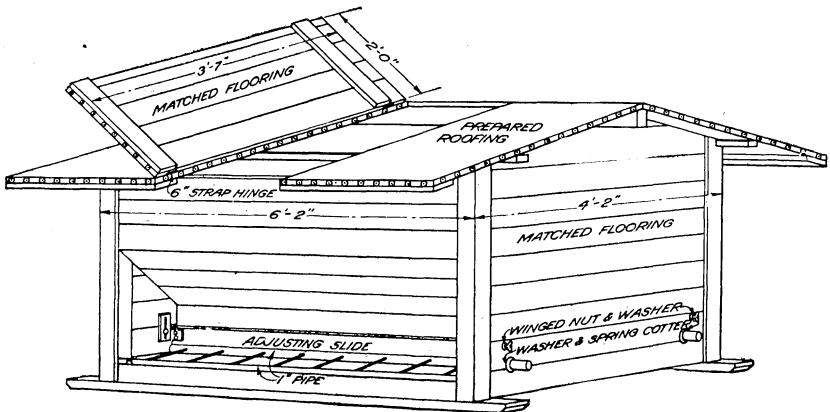


FIG. 3.—The Iowa self-feeder.

or three feeds to be used may be fed separately, either in different self-feeders or in different compartments of the same feeder. Where the feeds are not mixed the pigs may balance their rations as their appetites demand, in which case it has been found that they eat relatively less of the high-protein feeds as they gain in weight. This effects a material saving in the high-priced feeds consumed.

Permitting the hog to feed himself does not have the drawbacks to which such a system would be liable in the feeding of other kinds of animals, for he does not gorge himself until he becomes sick or loses his appetite. With the self-feeder the hog makes the most economical use of grain in the production of pork and gains weight most rapidly; he fattens more quickly, gets to market at an earlier date, and saves labor in his feeding and care. The quickest, the

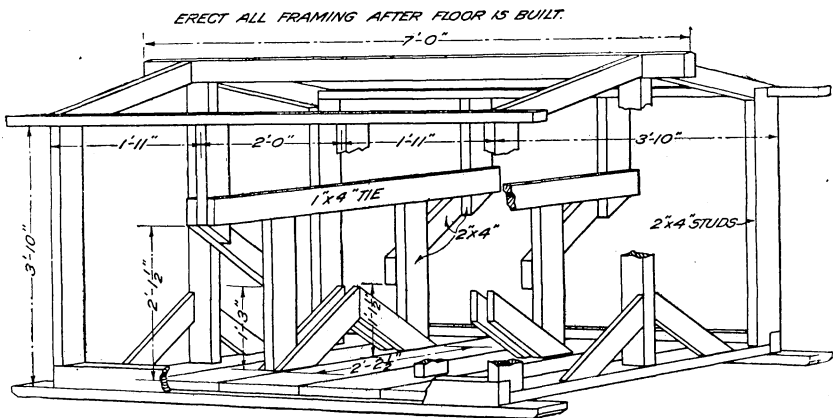


FIG. 4.—Framing detail of Iowa self-feeder. (Erect all framing after floor is built.)

easiest, and the most economical method of fattening pigs, with the least expenditure of grain and labor, is through the use of the self-feeder.

REQUIREMENTS OF A SELF-FEEDER.

The self-feeder should be designed primarily to keep an available supply of grain constantly before the hogs, and at the same time protect the contents against waste due to wind and rain. (Figure 2.)

A self-feeder consists of a hopper to hold the feed and a trough below it into which the grain flows as the pigs eat it. The hopper is made of such size that it will contain several days' supply of feed,

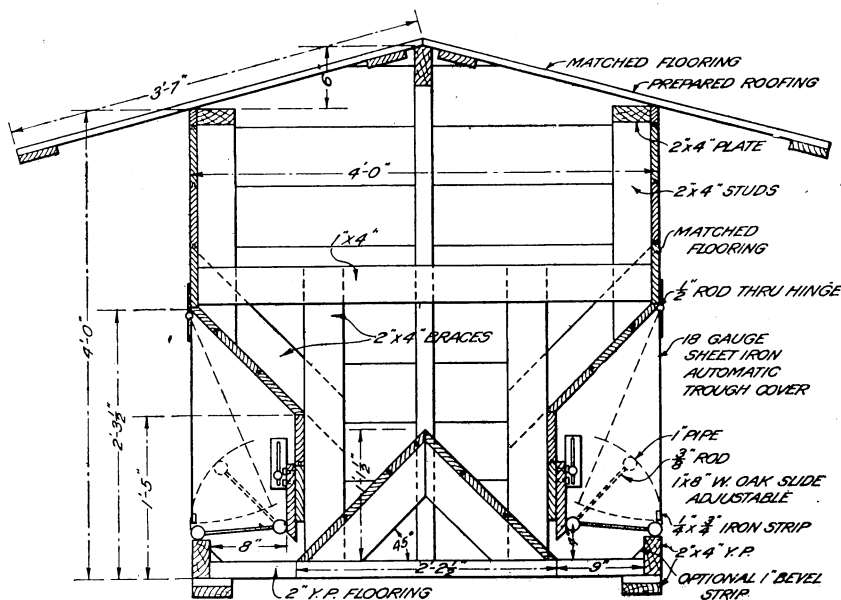


FIG. 5.—The Iowa self-feeder; cross section through center.

and the inside walls are made as smooth as possible in order not to obstruct the flow of grain to the trough. At the bottom of the hopper, leading into the feed trough, an adjustable slide should be placed to control the rapidity of the grain flow. This slide usually takes the form of a board running lengthwise of the feeder and fastened to the hopper by wing bolts. A certain amount of flexibility in this slide will aid materially in preventing clogging, for the constant rooting of the pigs against such a board will cause the contents to flow down more freely.

Best results are obtained when the self-feeder can be placed under cover, but as this is nearly always impossible the feeder must be con-

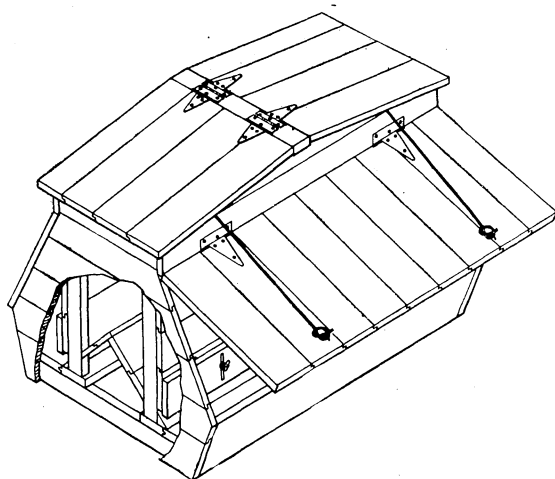


FIG. 6.—The Ohio self-feeder.

constructed to protect the contents from the weather. This is best accomplished by covering the end of the trough to keep out the wind and by projecting the roof to drain off the rain. Many variations are possible. The Ohio self-feeder is made with a hinged cover which fits over the feed trough and may be closed when the feeder

is not in use. The plan designed by the Iowa experiment station presents a novel solution of this difficulty. A piece of sheet iron is suspended by hinges from the side of the hopper in such a manner that it hangs inside of the opening and directly over the outer edge of the feed trough. The hogs can easily push this back over the trough while eating, but as soon as they leave the feeder the sheet iron is heavy enough to swing to the front of the trough again and exclude all rain and wind.

The self-feeder should be built upon a pair of skids or runners to prevent rotting of the floor and to facilitate moving. If strongly constructed this method of transportation will be much easier and quicker than loading upon a wagon or sled. When it is desirable to feed two or more concentrates separately in the same self-feeder a partition may easily be placed in the hopper at any distance from one end. By using the best grade of lumber and applying yearly a coat of paint a well-constructed self-feeder will give service through a number of years.

PLANS OF SELF-FEEDERS.

The two types of self-feeders represented in the plans

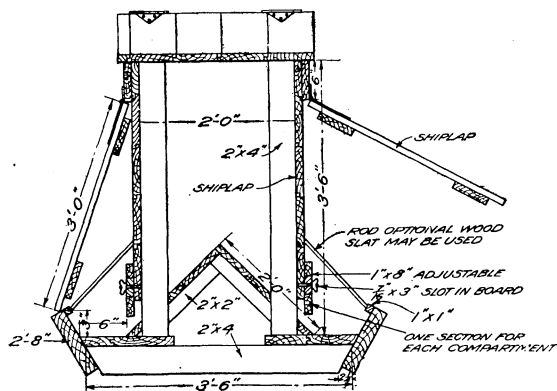


FIG. 7.—The Ohio self-feeder; end view with end siding boards removed.

shown are both excellent and practical. The first was designed by the agricultural engineering section of the Iowa experiment station and the second by the agricultural extension service of the Ohio State University, through whose courtesy they are reproduced.

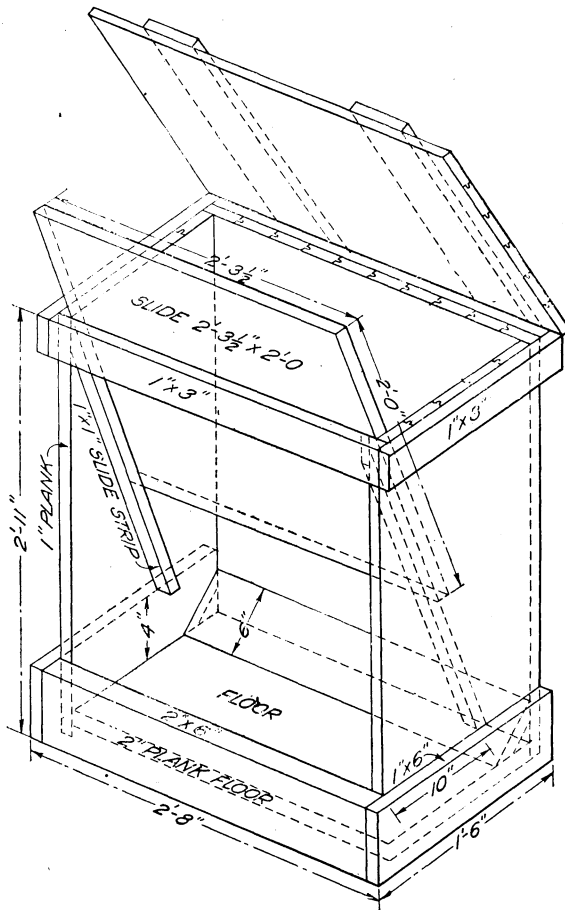


FIG. 8.—Self-feeder used at Government Experiment Farm, Beltsville, Md.

The Iowa self-feeder (figs. 3, 4, and 5) will accommodate 40 large shoats and has a capacity of 50 bushels of shelled corn. Its construction will require approximately the following amount of lumber, besides the hardware:

Lumber required for the Iowa self-feeder.

	Board feet.
1 inch matched siding.....	210
1 inch by 4 inch boards.....	12
2½ inch flooring.....	60
2 inch by 4 inch framing material.....	80
Total lumber.....	362

The Ohio self-feeder, a very practical and economical type, is shown in figures 6 and 7.

Bill of materials necessary for the Ohio double self-feeder.

	Board feet.
24 pieces $\frac{3}{4}$ inch by 8 inch shiplap, 6 feet long	96
20 pieces $\frac{3}{4}$ inch by 8 inch shiplap, 2 feet 10 inches long	38
10 pieces $\frac{3}{4}$ inch by 8 inch shiplap, 3 feet long	20
10 pieces $\frac{3}{4}$ inch by 8 inch shiplap, 4 feet 6 inches long	30
12 pieces $\frac{3}{4}$ inch by 8 inch shiplap, 2 feet long	16
8 pieces 2 inch by 4 inch framing material, 3 feet 6 inches long	19
2 pieces 2 inch by 4 inch framing material, 4 feet long	6
2 pieces 2 inch by 2 inch framing material, 4 feet long	3
6 pieces 2 inch by 2 inch framing material, 1 foot 6 inches long	6
2 pieces 2 inch by 8 inch for trough, 6 feet long	16
4 pieces $1\frac{1}{2}$ inch or 2 inch by 8 inch for trough, 6 feet long	32
Total	286

4 pieces 8 inch T hinges.

4 pieces 6 inch T hinges.

12 pieces $\frac{3}{8}$ inch by $2\frac{1}{2}$ -inch bolt, with thumbscrew.

6 pounds 8d nails.

3 pounds 20d nails.

20 square feet prepared roofing.

Capacity of the various sized feeders of the Ohio type.

	Hogs accommodated.
6 feet long, 15 bushels shelled corn, 400 pounds middlings, 315 pounds tankage	50
8 feet long, 20 bushels shelled corn, 540 pounds middlings, 420 pounds tankage	75
10 feet long, 25 bushels shelled corn, 670 pounds middlings, 525 pounds tankage	100

The self-feeder shown in figure 8 is one used at the Government Experiment Farm at Beltsville, Md. This self-feeder is very handy for suckling pigs while they are with their mother. A picture of this self-feeder is given on the title page of this bulletin.

A self-feeder of this type can be placed in the corner of the lot in which the sow and pigs are kept. Place a few boards across the corner from one fence to another to keep out the sow. Allow space enough under the bottom board to permit the young pigs to crawl under. They form a creep for the young pigs, which can learn to eat very readily without being disturbed. Cracked corn, or corn meal and tankage mixed in the proportion of 10 to 1, is an excellent ration. As the pigs grow older whole corn can be substituted for cracked corn or corn meal.